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United States Patent [19]

[11]

4,039,345**Emig et al.**

[45]

Aug. 2, 1977

[54] **SHRINKAGE-COMPENSATING
PORTLAND CEMENT CONCRETE AND
MORTAR COMPOSITIONS**

3,228,907	1/1966	Eash	260/29.6 S
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[57]

ABSTRACT

[21] Appl. No.: **596,701**

[22] Filed: **July 17, 1975**

This invention pertains to improved shrinkage compensating portland cement concrete and mortar compositions comprising essentially an expansive portland cement, mineral aggregate, from about 5 to about 25 percent based on cement weight of a styrene-butadiene-1,3 copolymer having a styrene to butadiene weight ratio of about 30:70 to 70:30, water and certain minor amounts of nonionic and anionic surfactants, and a foam depressant. When properly restrained by either external restraints or internal restraints in the form of ordinary reinforcement or fibers of various lengths, these compositions possess improved mechanical and physical properties such as compressive and flexural strengths and unexpectedly enhanced freeze-thaw resistance. Such compositions are particularly suited for use in the construction of crack-free structures.

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 475,377, June 3, 1974, abandoned.

[51] Int. Cl.² **C04B 7/35**

[52] U.S. Cl. **106/90; 106/99; 260/29.6 S**

[58] Field of Search 106/90, 99; 260/29.6 S, 260/29.7 S

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,043,790 7/1962 Sanders 260/29.7 S

12 Claims, 5 Drawing Figures